

LORIS BAZZANI

PRINCIPAL APPLIED SCIENTIST IN AI AT AMAZON AND MUSICIAN

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<http://lorisbaz.github.io>

<http://scholar.google.com/citations?user=1cdNGL4AAAAJ&hl=en>

MOTIVATION

With a proven track record of scientific publications and transferring science into products, I am excited to take opportunities that push the boundaries of what's possible, break the norms and help growing my technical, leadership and personal skills. Throughout my career, I have been deeply passionate about pushing the boundaries of AI, particularly in the realm of multimodal generative AI, that connect images/videos, language and different types of user interactions (e.g., LMMs RAGs and stable diffusion). My experience in researching new problems and developing large-scale machine learning and computer vision solutions has equipped me with a unique perspective on leveraging AI to create cutting-edge technology and ensuring that it meets both technical standards and business objectives. One of my key strengths lies in my ability to navigate between scientific breath and depth, allowing me to effectively reason and contribute to a wide range of scientific work while also diving deep into technical details when necessary. These skills has been instrumental in designing and prototyping complex AI models, articulating their practical value to leadership teams and delivering to production in collaboration with several scientists, engineers, and product managers across different organizations at global level.

EXPERIENCE

Principal Applied Scientist in AI at Amazon

2016-now

- Deep expertise in multimodal (generative) AI, that connects images/videos, language and different types of user interactions (e.g., LMMs, RAG and stable diffusion)
- Capacity to reason about a wide breath of science and products, and ability to switch to science depth mode at the right time
- Ability to design and prototype complex AI models and demonstrate their practical value to leadership
- Experience in transferring research into shipping products at Amazon scale. Examples of successful projects:
 - Product recommendation widgets that leverage multimodal similarity with diversification, trained at scale for fashion and home decor. Accessible by millions of customer in the detail page of products at amazon.com
 - Interactive product recommendation experiences available via Alexa-enabled devices, and research to create AI-powered shopping assistants
 - Virtual try-on experiences for make-up usable via the Amazon mobile App
 - Rapid Recap an action recognition-based tool to catch up on plays during live football games in Prime Video
 - Detection of nearly-similar videos and maturity rating to reduce manual tedious audit tasks in Prime Video
- Responsible of defining the strategy and science direction of a team of scientists. Experience in establishing research and productization roadmaps
- Collaborate and partner with business and engineering teams across the company
- Contribute in creating a centralized science team from 4 to 15 scientists
- Ability to present my work to non-technical audience and discuss with senior leadership, including VPs and SVPs
- Started as Applied Scientist, then Sr. Scientist and became Principal in 2022
- Mentorship and coaching experience of interns (18), scientists, engineers and product managers

Dartmouth College

2014–2015

Postdoc at the Visual Learning group led by L. Torresani

- Research on deep learning and computer vision, with production of joint publications and collaboration with industrial entities and international universities, on object recognition and video understanding; and basic teaching activities.

Italian Institute of Technology

2012–2013

Postdoc at the Pattern Analysis and Computer Vision group led by V. Murino

- Research on computer vision and machine learning, participating in industrial projects (e.g, ELSAG S.p.A.), with a focus on social interaction analysis, person re-identification and object recognition using dynamic Bayesian nets and Bayesian non-parametric models, and kernel-based methods.

VIBE

2012–2014

Co-founder a spin-off of the Italian Institute of Technology

- Developed Computer Vision and Machine Learning technologies capable of automatically generating accurate quantitative information about consumer behavior when faced with an advertisement, in the strictest respect for privacy.

University of Verona

2009–2012

Ph.D. in Computer Science with focus on Computer Vision and Machine Learning

- PhD Thesis: Beyond multi-target tracking: statistical pattern analysis of people and groups
- Supervisors: V. Murino and M. Cristani. Reviewers: A. Del Bimbo and R. T. Collins

University of British Columbia

2010

Visiting Scholar at the Laboratory for Computational Intelligence led by N. de Freitas

- Research on restricted Boltzmann machines, deep learning and attentional models

University of Verona

2006–2008

M.S. in Intelligent and Multimedia Systems. Thesis topics: particle filtering and multi-person tracking. Summa cum laude and top of the class

University of Verona

2003–2006

B.S. in Information Technology. Thesis topics: machine learning for medical imaging

RESEARCH, PUBLICATIONS & PATENTS

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- Z. Wang, S. Ramasinghe, C. Xu, J. Monteil, L. Bazzani, T. Ajanthan. Learning Visual Hierarchies in Hyperbolic Space for Image Retrieval, [ICCV](#) 2025.
 - M. Guillaumin, M. Jaritz, S. Sternig, L. Bazzani. UniCoRN: Unified Commented Retrieval Network with LMMs, Arxiv 2025.
 - Z. Wang, S. Ramasinghe, C. Xu, J. Monteil, L. Bazzani, T. Ajanthan. Learning Visual Hierarchies in Hyperbolic Space for Image Retrieval, Arxiv 2025.
 - V. Pippi, M. Guillaumin, S. Casciarelli, R. Cucchiara, M. Jaritz, L. Bazzani. ToFu: Visual Tokens Reduction via Fusion for Multi-modal, Multi-patch, Multi-image Task, Arxiv 2025.
 - A. Cao, M. Jaritz, M. Guillaumin, R. de Charette, L. Bazzani. LatteCLIP: Unsupervised CLIP Fine-Tuning via LMM-Synthetic Texts, WACV 2025.
 - X. Yang, Y. Zuo, S. Ramasinghe, L. Bazzani, G. Avraham, A. van den Hengel. ViewFusion: Towards Multi-View Consistency via Interpolated Denoising, [CVPR](#) 2024.
 - R. Bodur, E. Gundogdu, B. Bhattarai, T-K Kim, M. Donoser, L. Bazzani. iEdit: Localised Text-guided Image Editing with Weak Supervision, In CVPR Workshops, 2024.
 - US Patent 11,720,942: Interactive retrieval using visual semantic matching, 2023.
 - US Patent 11,809,520: Localized visual similarity, 2023.
 - US Patent 11,829,445: Attribute-based interactive product recommendations, 2023.
 - M. Xu, E. Gundogdu, M. Lapin, B. Ghanem, M. Donoser, L. Bazzani. Contrastive Language-Action Pre-training for Temporal Localization, Arxiv, 2022.
 - US Patent 11,416,910: Visual blending of content, 2022.
 - US Patent 11,361,212: Machine learning system to score alt-text in image data, 2022.
 - Y. Hou, E. Vig, M. Donoser, L. Bazzani. Learning Attribute-driven Disentangled Representations for Interactive Fashion Retrieval, [ICCV](#), 2021.
 - A. Salvador, E. Gundogdu, L. Bazzani, M. Donoser. Revamping Cross-Modal Recipe Retrieval with Hierarchical Transformers and Self-supervised Learning, [CVPR](#), 2021.
 - A. D’Innocente, N. Garg, Y. Zhang, L. Bazzani, M. Donoser. Localized Triplet Loss for Fine-Grained Fashion Image Retrieval. CVPR Workshops, 2021.

- Y. Chen, and L. Bazzani. Learning Joint Visual Semantic Matching Embeddings for Language-guided Retrieval, [ECCV](#), 2020.
- Y. Chen, S. Gong, and L. Bazzani. Image Search with Text Feedback by Visiolinguistic Attention Learning, [CVPR](#), 2020.
- US Patent 10,643,074: Automated video ratings, 2020.
- L. Bazzani, T. Domhan, and F. Hieber. Image Captioning as Neural Machine Translation Task in SOCKEYE, Arxiv, 2018.
- S. Vascon, and L. Bazzani, Group Detection and Tracking using Sociological Features, In Group and Crowd Behavior for Computer Vision, 2017.
- V. Murino, S. Gong, C. C. Loy and L. Bazzani, Image and Video Understanding in Big Data, Special Issue in [CVIU](#), 2017.
- S. Vascon, and L. Bazzani, Group Detection and Tracking using Sociological Features, In Group and Crowd Behavior for Computer Vision, 2017.
- M. San Biagio, H. Q. Minh, L. Bazzani, V. Murino. Approximate Log-Hilbert-Schmidt distances between covariance operators for image classification, [CVPR](#), 2016.
- L. Bazzani, A. Bergamo, D. Anguelov, L. Torresani. Self-taught object localization with deep networks, WACV, 2016.
- H. Q. Minh, L. Bazzani, V. Murino, A unifying framework in vector-valued reproducing kernel Hilbert spaces for manifold regularization and co-regularized multi-view learning, [JMLR](#), 2016.
- H. Q. Minh, M. San Biagio, L. Bazzani, and V. Murino, Kernel Methods on Approximate Infinite-Dimensional Covariance Operators for Image Classification, Arxiv, 2016.
- L. Bazzani, M. Zanotto, M. Cristani, V. Murino, Joint individual-group modeling for tracking, [PAMI](#), 2015.
- L. Bazzani, M. Cristani, and V. Murino. SDALF: Modeling human appearance with symmetry-driven accumulation of local features, Person Re-identification, 2014.
- M. San Biagio, L. Bazzani, M. Cristani, V. Murino, Weighted bag of visual words for object recognition, ICIP, 2014.
- H. Q. Minh, L. Bazzani, V. Murino, A unifying framework for vector-valued manifold regularization and multi-view learning, [ICML](#), 2013.
- D. Figueira, L. Bazzani, H.Q. Minh, M. Cristani, A. Bernardino, and V. Murino, Semi-supervised multi-feature learning for person re-identification, AVSS, 2013.
- P. Salvagnini, L. Bazzani, M. Cristani, and V. Murino, Person re-identification with a PTZ camera: an introductory study, ICIP, 2013.
- L. Bazzani, M. Cristani, and V. Murino. Symmetry-driven accumulation of local features for human characterization and re-identification, [CVIU](#), 2013.
- L. Bazzani, D. Tosato, M. Cristani, M. Farenzena, G. Paggetti, G. Menegaz, V. Murino, Social interactions by visual focus of attention in a three-dimensional environment, Expert Systems, 2013.
- L. Bazzani, V. Murino, and M. Cristani, Decentralized particle filter for joint individual-group tracking, [CVPR](#), 2012.
- M. Zanotto, L. Bazzani, M. Cristani, and V. Murino, Online bayesian non-parametrics for social group detection, [BMVC](#), 2012.
- L. Bazzani, M. Cristani, G. Pagetti, D. Tosato, G. Menegaz, V. Murino, Analyzing groups: a social signaling perspective, Video Analytics for Business Intelligence, 2012.
- B. I. Barbosa, M. Cristani, A. Del Bue, L. Bazzani, and V. Murino, Re-identification with RGB-D sensors, In 1st International Workshop on Re-Identification, 2012.
- L. Bazzani, M. Cristani, A. Perina, V. Murino, Multiple-shot person re-identification by chromatic and epitomic analyses, PRL, 2012.
- M. Denil, L. Bazzani, H. Larochelle, and N. de Freitas, Learning where to attend with deep architectures for image tracking, [Neural Computation](#), 2012.

- L. Bazzani, N. de Freitas, H. Larochelle, V. Murino, J. Ting, Learning attentional policies for object tracking and recognition in video with deep networks, [ICML](#), 2011.
- D. S. Cheng, M. Cristani, M. Stoppa, L. Bazzani, V. Murino, Custom pictorial structures for re-identification, [BMVC](#), 2011.
- M. Cristani, L. Bazzani, G. Paggetti, A. Fossati, A. Del Bue, D. Tosato, G. Menegaz, V. Murino, Social interaction discovery by statistical analysis of F-formations, [BMVC](#), 2011.
- M. Cristani, G. Paggetti, A. Vinciarelli, L. Bazzani, G. Menegaz, V. Murino, Towards computational proxemics: Inferring social relations from interpersonal distances, SocialCom, 2011.
- L. Bazzani, M. Cristani, A. Perina, M. Farenzena, and V. Murino, Multiple-shot person re-identification by HPE signature, ICPR, 2010.
- M. Farenzena, L. Bazzani, A. Perina, V. Murino, and M. Cristani Person re-identification by symmetry-driven accumulation of local features, [CVPR](#), 2010.
- L. Bazzani, N. de Freitas, J. Ting, Learning attentional mechanisms for simultaneous object tracking and recognition with deep networks, Workshop on Deep Learning and Unsupervised Feature Learning, 2010.
- L. Bazzani, M. Cristani, and V. Murino, Collaborative particles filters for group tracking, ICIP, 2010.

[Blue color](#) = top-tier computer vision/machine learning conferences or journals.

CODING & TOOLS

- Python, PyTorch, HuggingFace, git, L^AT_EX, bash scripting, LLM prompting, various AWS services
- Passionate about and participated to several internal Hackathons (at least 1 per year)
- In past, I worked with MATLAB, Lua/Torch7, JavaScript, Qualtrics, Alexa skill devel tools

AWARDS & GRANTS

- **Outstanding Reviewers @ CVPR**, recognition that reflects not only the quality and depth of reviews but also your commitment to fairness, clarity, and timely feedback, 2025.
- **Amazon Accessibility Innovation Award**, internal award given to individuals who created experiences to improve accessibility, 2021.
- **Amazon Robotics Challenge Award**, internal award given to the team who won the robotics challenge, 2018.
- **Finalist at SmartCup Liguria 2013 with VIBE**, 5 startups were selected at the regional level to enter this stage where they were presented to a panel of expert judges, 2013.
- **IBM Best Student Paper Award**, track: Computer Vision at International Conference on Patter Recognition ICPR, 2010.
- **Scholarship** from University of Verona that supported my Ph.D. from Jan. 2009 to Dec. 2011.
- **Scholarship** from EU-Project FP7 SAMURAI, grant FP7-SEC-2007-01 No. 217899, that contributed to support my Ph.D. from Jan. 2009 to Dec. 2011.
- **Travel grant** from University of British Columbia to attend Neural Information Processing Systems, 2010.
- **Travel grant** from International Machine Learning Society to attend the International Conference on Machine Learning, 2011.

AI COMMUNITY EFFORTS

- Co-organizer of the workshop on Computer Vision for Fashion, Art, and Design @ CVPR/ICCV
- Co-organizer of the workshop on 3D Vision and Modeling Challenges in eCommerce @ ICCV/ECCV
- Co-organizer and program chair of 8 AI conferences and shopping science summits internal at Amazon
- Active reviewer for CVPR, ICCV, ECCV, NeurIPS, ICML, ICLR, IEEE TPAMI, IJCV, IEEE Transactions on Multimedia, IEEE Transactions on Image Processing

TEACHING & PRESENTATIONS

Presentations

Delivered 50+ technical presentations at AI conferences and internal Amazon events to audiences of up to 1000 people

Dartmouth College

Winter 2015

Machine Learning. Assistant of undergrad course by L. Torresani

Italian Institute of Technology

Winter 2013

An Introduction to Machine Learning and Computer Vision for PhD students

University of Modena and Reggio Emilia

Spring 2011

Person Re-identification at the Short Spring School in Surveillance for PhD students

MY MENTORS

I was fortunate enough to work with and learn from my awesome mentors during my career so far. Their advice and feedback helped me growing in a way I could never imagine. Thank you all!

- Prof. Anton van den Hengel, Prof. Larry Davis, Dr. Raffay Hamid, Dr. Josh Miele, Dr. Werner Trobin: science and technical guidance at Amazon
- Dr. Michael Donoser and Dr. Rajiv Chopra: leadership and management guidance at Amazon
- Prof. Lorenzo Torresani and Prof. Hugo Larochelle: research leadership at Dartmouth College
- Prof. Vittorio Murino and Prof. Marco Cristani: research leadership at University of Verona and at the Italian Institute of Technology
- Prof. Nando de Freitas: research leadership at the University of British Columbia

WHAT ELSE ABOUT ME

You might want to know other traits of me, not just my technical skills and achievements, right? Here are some:

- Growth mindset and value learning new skills, expanding my knowledge and improving different abilities in all aspects of my life
- Cultivate cross-cultural communication skills through living and working in diverse environments
- Nurture my creative side as musician, playing keyboards and piano since a young age. I played in several local bands and have one now. I'm currently learning guitar and music production
- Invest on taking care of the mind, emotions and my mental health via meditation, introspection and other tools
- High level of self-awareness. I'm keen to admit my mistakes when others or I recognize them, and learn from them
- My favourite books I've recently read: the power of vulnerability by B. Brown; the myth of normal by G. Matè and D. Matè; the five invitations by F. Ostaseski
- My big 5: openness 90, conscientiousness 88, extraversion 40, agreeableness 46 and neuroticism 29
- Fluently speak Italian, English and Venetian (yes, it's a language and quite different from Italian). I'm slowly learning German too

What colleagues say about me:

- "You cultivate an exceptional research culture where creativity and science can thrive. Through your guidance, teams uncover innovative paths forward by exploring new directions and questioning norms."
- "He is a top tier scientist that can handle large technical complexity. His scientific depth, breadth and technical skills are top notch."
- "One of his super powers is to give honest and constructive feedback, without compromising for social cohesion. He voices concerns when a minority of the group might also be impacted."
- "He is that rare combination between a big thinker and someone who's in touch with the technical details."

Some of the growth areas I'm focusing on: foster more autonomy in others and improve my strategical leadership.